

CONTRACTORS' PERSPECTIVE OF PREFERRED RISK ALLOCATION IN
PUBLIC-PRIVATE PARTNERSHIP (PPP) PROJECTS IN PAHANG

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ABSTRACT

Public private partnership (PPP) procurement was introduced into Malaysia through the Ninth Malaysia Plan in March 2006. PPP capable to transfer risk away from public sector to private sector. Therefore, it is important for the public and private parties to understand the risks through the whole project lifecycle prior the risk allocation agreement is made. This study aims to identify the critical risk factors of PPP projects in Pahang and to examine the preferred risk allocations for PPP projects in Pahang. Data were collected by using a set of survey questionnaire among the contractors (one representative) in each company in Grade 7 of Construction Industry Development Board (CIDB) in Pahang. Results from the study indicated that top five risk factors in Pahang are: construction time delay", "land acquisition", "delay in project approvals and permits", "design deficiency" and "inflation rate volatility". Lastly, on risk allocation preferences, this study indicated that 7 risks out of 46 risks would be preferably allocated to the public sector while 25 risks could be assigned to private sector. 11 risks were preferred to be shared by both public and private parties and the remaining of 3 risks depended on project circumstances. The results provided sufficient insight and understanding into the process of PPP as well as look deeply into the critical risks associate in the PPP projects and the contractors' preferred risk allocation for ensuring success of PPP projects.

ABSTRAK

Perolehan Public Private Partnership (PPP) telah diperkenalkan ke dalam Malaysia melalui Rancangan Malaysia ke-9 pada Mac 2006. PPP mampu untuk memindahkan risiko dari sektor awam kepada sektor swasta. Oleh itu, ia penting bagi pihak-pihak awam dan swasta untuk memahami risiko melalui kitaran hayat projek keseluruhan sebelum perjanjian peruntukan risiko dibuat. Kajian ini bertujuan untuk mengenal pasti faktor-faktor risiko kritikal projek PPP di Pahang dan untuk mengkaji peruntukan risiko pilihan untuk projek PPP di Pahang. Data telah dikumpulkan dengan menggunakan satu set soal selidik kajian di kalangan kontraktor (seorang wakil) dalam setiap syarikat dalam Gred 7 daripada Lembaga Pembangunan Industri Pembinaan (CIDB) di Pahang. Hasil daripada kajian ini menunjukkan bahawa lima faktor risiko di Pahang adalah: pembinaan kelewatan masa " , " pengambilan tanah " , " kelewatan dalam kelulusan dan permit " , " kekurangan reka bentuk " dan " kadar inflasi turun naik " projek . Akhir sekali , kepada pilihan peruntukan risiko , kajian ini menunjukkan bahawa risiko 7 daripada 46 risiko akan sebaik-baiknya untuk sektor awam manakala 25 risiko boleh diserahkan kepada sektor swasta . 11 risiko telah memilih untuk dikongsi oleh kedua-dua pihak awam dan swasta dan baki 3 risiko bergantung kepada keadaan projek . Keputusan memberikan pandangan dan pemahaman yang mencukupi ke dalam proses PPP serta melihat jauh ke dalam syarikat bersekutu risiko kritikal dalam projek-projek PPP dan peruntukan risiko pilihan kontraktor untuk memastikan kejayaan sesuatu projek-projek PPP.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Following the introduction to this study, problem background, problem statement, scope of study, significance of study, research terms and definition, and also the limitation of the study soon will be emphasized in chapter one. The findings will give the both private and public sectors to have a good understanding of importance of Public Private Partnership (PPP) projects as well as risk allocation and risk factors which will provide useful info for companies that plan to join PPP projects in Malaysia.

1.2 PROBLEM BACKGROUND

Over few decades, there has been an increased attention on the delivery of infrastructure and construction in developing countries. The evolution of public infrastructure requires a vast act of investment funds involves enabling it to as a separate asset class with stable income over the long time. Due to this reason, it increased the interest on the part of private parties and other financial investor to invest. It also matched by the demand for new infrastructure by developing countries as well as developed countries (Hodge and Greve, 2005). Therefore, PPP model are suitable in form of collaboration between both public and private parties. The government is highly concerned that those PPP infrastructure projects will provide enough and continually benefits to the general public. However, infrastructure projects naturally tend to be quasi monopolies.

In view of this consideration, a PPP form of projects will guarantee to be successfully implemented and needed for highly regulated so as to assure the private parties do not make undue advantage at the expense of the general public. Thus, the PPP contractual system will set off properly the benefits and responsibility between the both public and private parties.

PPP is a form of procurement or contractual agreement between a public and private partners which has been not only well-known in infrastructure development but also other construction management, refurbishment, maintenance and etc in Asia (Hwang et al., 2013). It is considered as an effective way of delivering infrastructure projects or service to achieve best Value For Money (VFM) (Ke et al., 2010). VFM is one of the public procurement principles which stress on the government procurement should yield the best returns for every Malaysian Ringgit spent in terms of quality, quantity, timeliness, price and source (Ministry of Finance Malaysia, 2010).

Moreover, PPP pursues to combine the benefits of flexible negotiation and competitive tendering, and allocate risk between the public and private partners in an agreed basis (Li et al., 2005). The motif for implementing PPP was natural to have a breakthrough in the financial situation. Some countries adopted PPP to improve operational efficiency, technology innovation, and more dynamic participation of private parties in public sectors. The factors of deficit in fiscal, pressure in budgetary, supply-demand gap, and lack of public services to infrastructure push some countries to adopted PPP (Chowdhury et al., 2011; Hwang et al., 2013).

The design of every PPP contractual structure shows how public and private partners can value and allocate risks optimally between themselves. Next, the design of a PPP contract needs to be carefully considered the assessment of risk and the parties who best manage it. So, the degree to which risk is genuinely transferred from the public to the private sector and shared optimally contribute to the success of PPP projects (Hodge and Greve, 2005). Appropriate risk allocation is crucial in PPP project success. Optimal risk allocation therefore pursues to risk minimization to the project such as individual risk premiums and the overall project cost, by allocating to the party in the best position to

manage them (Hayford, 2006). This implies that the risks should be apportioned to the parties which best manage it with the lowest price and highest confidence.

1.3 PROBLEM STATEMENT

Public private partnership (PPP) procurement was introduced into Malaysia in through the Ninth Malaysia Plan in March 2006. PPP contains the transfer of responsibility to the private sector in managing and finance a package of capital investment and services including the construction, management, maintenance, refurbishment and replacement of public sector assets such as buildings, infrastructure, equipment and other facilities, which creates a standalone business (PPP Unit Prime Minister Department, 2009).

The implementation of PPP must be able to make government projects more efficient where the risks and rewards are optimally shared between the two parties. Many researchers noted that one of the advantages of PPP it is capable to transfer risk from public companion to proficient private companion. In order to allocate the risk, risk management is the crucial factor to deliver a well risk allocation. According to Malaysia's PPP Guideline (2009), optimal sharing of risk is one of the key feature where the party who has the best capability to manage risk will bear the risk.

A Malaysia researcher stated that some of the PPP projects in Malaysia involved many risks which are not optimally share between the parties, which might cause them constantly facing failure or delay in project completion, over budget, and failed to meet quality standards or operational requirements. Even though the risk management process has been introduced in the construction industry, a big percentage of them are not well organized and not being implemented in a systematic structure (Zaini et al., 2010). This is the reason why this research concerns about the critical risks and the most appropriate risk allocation that concern about VFM for each party. VFM means the optimal use of resource combination of benefits and costs, to achieve intended outcomes.

There is the need to identify and allocate all risk factors associated with PPP projects. There are many factors of event that involved risk may give negative impact to

project objectives. Therefore, the risk factor has to be identified before the risk being allocated. The risks should be determine so it will be more prepared and organize. After the risk is identified, allocation of the risk to the private, public or shared should be determined. This is because the risk allocation is crucial for both public and private parties in PPP projects to achieve their aims. Therefore, risk allocation is essential to equalize the rewards and risks of private and public sectors in PPP projects. Confirmation of VFM for the public sector and revenue flows for the private sector is being concerned. The identification of stakeholders' risk allocation preferences is needed and important as the input for project procurement and contract negotiation.

The research outcomes will lead to both the practice and research in risk management for Malaysia's PPP projects and also provide valued information for the private sector to join the PPP projects in Malaysia.

1.4 RESEARCH OBJECTIVES

- i) To identify the critical risk factors of PPP projects in Pahang.
- ii) To examine the preferred risk allocations for PPP projects in Pahang.

1.5 RESEARCH QUESTIONS

- i) What are the critical risk factors for PPP projects in Pahang?
- ii) What is the preferred risk allocations for PPP projects in Pahang?

1.6 SCOPE OF THE STUDY

This study will be carried out by using questionnaire survey. The scope of study will be limited to how contractors' perspective of preferred risk allocation on PPP project in Pahang. Due to time constraints, no model is developed to assess the preferred risk allocation of different PPP projects model. Responses from survey conducted are limited to contractors Grade 7 that registered with the Construction Industry Development Board (CIDB). Besides that, it is suitable to focus because there are many PPP projects located in Pahang.

1.7 SIGNIFICANCE OF THE STUDY

It is significant for both public and private sectors to understand the possible risks associated with PPP projects throughout the project life cycle, the criticality of risks and how well to allocate them to promise enduring success of partnerships. The results can be used to assist contractual parties to take appropriate way to manage the risks by adding mitigation strategies on them. Thus, this can prevent their interests being affected when the risk exists.

Furthermore, this thesis is also to evaluate the risk allocation between parties involved in PPP contract in contractor's perspective. The outcomes of this work can also be a reference for contractual parties to see their obligations in certain risk events. Furthermore, this will likewise be a good recommendation for contractors when valuing the risks. This research is anticipated to offer sufficient penetration and intellect into the cognitive operation of PPP as well as look deeply into the critical risks associated in the PPP projects and the contractors' preferred risk allocation for ensuring success of PPP projects.

1.8 LIMITATION OF STUDY

The goodness of the data may be affected due to the time constraint in collecting data within 1 month. The result of the research is applicable within Malaysia due to the scope restriction which is the data collection only focus within Pahang area. A little or none of formal documentation and experience on the public and private partnership, with the construction company which contribute to high difficulties in data access

1.9 EXPECTED RESULTS

This research is expected to provide sufficient insight into the entire process of PPP as well as look into the critical risk factors and preferred risk allocation between the public and private sectors. This research will also provide responses and comments from the stakeholders associated with PPP projects. This will include views of individuals in the public and private sectors. All responses will be analyzed for common parameters. This will help provide the need for concern on the critical risks and the standard risk allocation schemes for Malaysia PPP projects.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Basically, this literature review is focused on obtaining inclusive background knowledge about the various critical risk factors associated with PPP projects, different categories, classifications of these risks, risk allocation preferences of contracting parties. For this purpose, various current and previous research papers were reviewed.

2.2 RISK MANAGEMENT IN CONSTRUCTION INDUSTRY

The construction industry has become one of the sectors that significantly contribute to Malaysia's economy with rapid growth. However construction project in Malaysia contains high risk. The construction risk level during the construction phase is recognized higher risk than in other types of economic sector. Risk can be easily found in the process of the project management in construction. One researcher described that risk is inherent in any construction industry, whether is predictable or unpredictable (Hamimah, 2008). According to the Project Management Institute (PMI) (2008), risk is an ambiguous condition or event which will give a positive and negative impact on a project objectives if happens. Further explained by this affirmation, the construction project is complex and fill with the abandon of negative consequences, the aim of project management is to cut the negative event's occurrence and increase the positive event occurrences.

A statement made by some researchers, risks will cause the contractor fail to complete the project on time, which can lead to insufficient fund and the project may be terminated (Zaini et al., 2010). The contractors that face with construction works are higher probability to deal with risk events which may bring negative impact on all other project performance, such as delays, poor quality, loss of productivity, loss of morale, and cost overruns. The risks are generally presumed by the owner of the project unless it's relocated to or presumed by another party for fair compensation and reimbursement. Hamid also expressed about the principle, standard in defining whether the risk can be transferred is determined by the receiving party both the expertise to control or minimize it and ability of competency to access the risks (Hamimah, 2008). Therefore, risk management should be stressed and applied in every size of construction projects, to ensure the achievement of project objectives (Hwang, et al., 2014).

Mills (2001) and Tang et al. (2007) mentioned that risk management has become a main part and vital component of the process in decision making in construction project. Some other researchers also stated that risk management is an active decision-making process, which includes accepting an expected and known risk and or choose ways to alleviate the impact and probability of the risk occurrence, maximize the opportunities and minimize the threat (Loosemore et al., 2006). In other words, risk management is formed to control and mitigate the risks which will affect the project performance success. Besides that, risk management is objectively to enhance the project performance and increase the effectiveness of the project. Its influence, enhance and increase the probability of advantageous project performance in terms of quality, cost, and time of a construction project if risk management is fully and implemented systematically (Lee and Azlan, 2012).

Moreover, many researchers mentioned that risk management is not only a set of tools and methods, but integrated with the project management process (Tang et al., 2007; Hamimah, 2008). The project team use risk management to clearly identifies the risks and uncertainties, analysis and evaluate the identified risks based on the sufficient information, and then with a mitigation plan. The activities included integrated with project management process group such as a planning process group, executing process group, monitoring and controlling process group. It can be conclude that the risk management is

not a one day of activity, it need to be carried out all ways through the project life cycle and also in organization.

In the situation in Malaysia, many contractors apply uncomplicated, rational, easy and low cost approaches during risk identification such as brainstorming and checklist methods. The risk identification method is unlike in each project and depending on the organizational policies, resource allocated, project type, characteristics and so on. Risk analysis includes software, training, experienced personnel and specialist advice to carry out the activities with come out effective response. Besides that in risk response, contractors prioritized and focused on risk factors with greater impact and probability. Yet, less number of companies apply sufficient process of reviewing, recording and checking the ongoing risk management activities (Norazian et al., 2008). Many organizational awareness on the importance and benefits of risk management is comparatively low. Though, it is supported by Norazian et al. (2008) that companies in the operation of construction activities implemented risk management, even though the number of recognizable and effective risk management framework users in Malaysia is only a low percentage. Yet, the formal risk management culture in big companies has already strongly imbedded with great reputation, strong financial and which normally involved in major projects only. Mills (2001) suggests that to improve the management of risk in projects throughout the delivery of a project, a systematic approach must be taken to manage risks.

In conclusion, risk management still a newly management concept in the Malaysian construction industry. It requires a long period for the practitioner to adopt and fully implemented and accepted in this industry. This is because most of them are unwilling to change and go for the new concept; they are even enjoying their comfort zone, which still use the traditional culture without notice that this risk management will eventually realize their task easier and less hazardous.

2.3 RISK MANAGEMENT PROCESS

Despite several risk management processes proposed in the literature (Flanagan & Norman, 1997; Loosemore et al., 2006; PMI, 2008; Hwang et al., 2014), generally, the 5 crucial steps in the risk management process are risk management plan, risk identification, risk analysis, risk response, and risk monitoring and control. The process is illustrated in Figure 2.1.

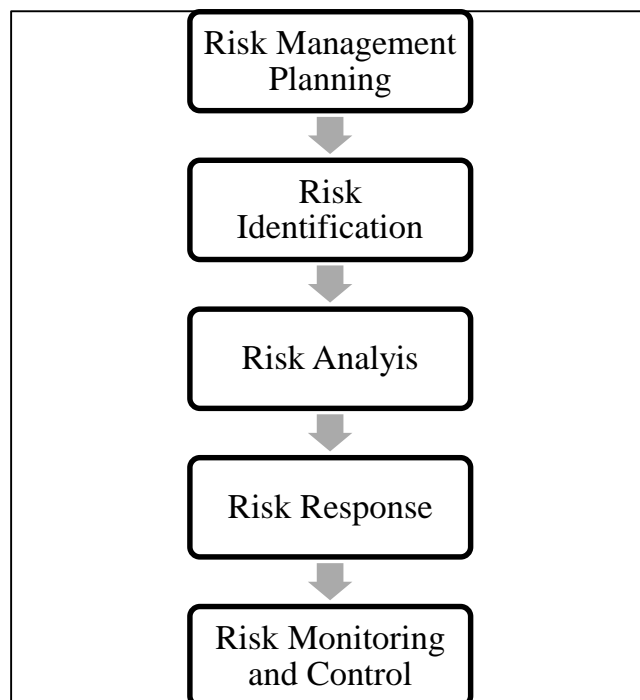


Figure 2.1: Risk Management Process

The first step in the risk management process, risk management planning, includes the planning of the risk management approach and perform. This is done to ensure that the level, type and visibility of risk management are proportionate with both the risk size and the project importance (Cheng and Hamzah, 2013). Planning and context establishment integrate in this stage to understand the background and environment.

Risk identification, the second stage of risk management, recognize, filter and rank the risks in a risk outline with identifying the risks (Cheng and Hamzah, 2013). Some researchers describe that it requires understanding and determining the potential

unsatisfactory outcomes likely to affect a project (Kulululanga and Witness Kuotcha, 2010). Risk classification is an integral part in risk identification with arranging the identified risks in different category of risk group according their characteristics.

The third stage in risk management is risk analysis, it is regarding the effect quantification of the identified risks. It requires the appraisal of the probability and impact of risks to settle their severity in order that the seriousness that could create an opposing effect are identified, the assets that could be involved are known, the features that increase the risk probability are recognized and the extent to which the risk manifest itself (Kulululanga and Witness Kuotcha, 2010). There are generally two methods to assess the risks, which are quantitative analysis and qualitative analysis (Loosemore et al., 2006; PMI, 2008; Lee and Azlan, 2012). Risk is quantified as a mathematical form in terms of quality, cost and time in quantitative risk analysis.

The forth step is risk response, is the creation of an approach to maximize the potential opportunities and mitigate the potential threats (PMI, 2008). Lee and Azlan (2012) noted that risk response, also known as risk treatment which include the steps of choosing and finding protective measure to change the project risks. There are many literatures describe the way of risk response which include 6 types of approaches which are, risk reduction, risk transference, risk control, risk retention, risk sharing and risk avoidance (Cheng and Hamzah, 2013; Kulululanga and Witness Kuotcha, 2010; Loosemore et al., 2006; PMI, 2008; Lee and Azlan, 2012). The selection of appropriate risk response approaches, it must be efficient and effective for the organization (Lee and Azlan, 2012) and with the cost effective and agreed by others involved parties (Cheng and Hamzah, 2013).

In the last stage, risk monitoring and control in risk management, it is vital to make sure that the anticipated effects of the risk responses implementation are achieved throughout the project life cycle (Cheng and Hamzah, 2013). Risk monitoring and control includes the process of identification, analyzing, and planning for risk, tracking of identified risks, and reanalyzing existing risks, monitoring risk symptoms and triggers,

and reviewing the execution of risk response strategies while evaluating their effectiveness (CDC Unified Process, 2006).

2.4 MODEL OF PUBLIC PRIVATE PARTNERSHIP (PPP)

Public Private Partnership is a method where the public and private sector collaborate to produce a public service or infrastructure. In this form of cooperative approach, both public and private sector will normally perform their own expertise, contribute resources and share the risks and responsibility involved (Tolani, 2013). In simple words, PPP is any arrangement and or agreement which will require the risks sharing, rewards, resources and responsibilities for actions and outcomes on a long-term basis.

There are many forms of PPP model which would be different in every project where it is been determined by the type of development project and intentions of government agencies and private parties' partnership to a variable degree. Therefore, it needs further verification on the most appropriate model before continuing to the next stage (Nur Nasiha, et al., 2013). According to UNESCAP (2011), the PPP models can be classified into 5 wide categories which are Supply and Management Contracts, Afferimage/ Lease, Concessions, Turnkey Contracts, and Private Finance Initiative (PFI) and Private Ownership. Each of the models is different in few degree variables which are the main variants, responsibility for the investment, ownership of capital assets, duration of contract and assumption of risk.

Table 2.1: Classification of PPP models

| Broad category | Main Variants | Ownership of capital assets | Responsibility of investment | Assumption of risk | Duration of contract (years) |
|--|------------------------|-----------------------------|------------------------------|--------------------|------------------------------|
| Supply and management contract | Outsourcing | Public | Public | Public | 1-3 |
| | Maintenance management | Public | Public/Private | Public/Private | 3-5 |
| | Operational management | Public | Public | Public | 3-5 |
| Turnkey | | Public | Public | Public/Private | 1-3 |
| Affermage/Lease | Affermage | Public | Public | Public/Private | 5-20 |
| | Lease * (BLT) | Public | Public | Public/Private | 2-30 |
| Concessions | Franchise | Public/Private | Public/Private | Public/Private | 3-10 |
| | **BOT, BTO, BOOT, BROT | Public/Private | Public/Private | Public/Private | 15-30 |
| Private ownership of assets and PFI type | ***BOO/DBFO | Private | Private | Private | Indefinite |
| | PFI | Public/Private | Private | | |
| | Divestiture | Private | Private | Private | Indefinite |

* Build-Lease-Transfer (BLT)

** Build-Operate-Transfer (BOT), Build-Transfer-Operate (BTO), Build-Own-Operate-Transfer (BOOT), Build-Rehabilitate-Operate-Transfer (BROT)

*** Build-Own-Operate (BOO) / Design-Build-Finance-Operate (DBFO)

Source: UNESCAP (2011)

Each model in Table 2.1 has its own advantages and disadvantages which can be desirable for accomplishing the major aims of public private partnership to a varying level. Public and private partners should consider the suitability of each model due to some important factors such as, maturity of PPP market, socioeconomic, rules and regulations, technological condition, and political condition about the services in a sector.

2.5 PUBLIC PRIVATE PARTNERSHIP (PPP) IN MALAYSIA

In Malaysia, the participation of the private sector in providing and assisting with the provision of public services and facilities is not new. Malaysia has implemented PPP

for almost three decades. It has existed since the mid-1980s, when Malaysia was faced with the fiscal and debt crisis. The government began cutting down the expenses by reducing the public sector involvement in business and introduced measures to reduce Malaysia's budget deficits (Khairuddin, 2014). Therefore, the government seeks help from the private sectors for the development and economies activities of the country which consistent with the worldwide trend in economic liberalization. In simple words, Malaysia government have a cost reduction on public projects by collaborate with private sectors on the delivery of projects.

According to the Ninth Malaysia Plan report (2006), the implementation of public projects using the PPP or Private Finance Initiative (PFI) scheme were officially announced by the fifth Prime Minister of Malaysia, Datuk Seri Abdullah Ahmad Badawi. The PPP is formally defined in the Ninth Malaysia Plan report (2006) as:

'The transfer to the private sector the responsibility to finance and manage a package of capital investment and services including the construction, management, maintenance, refurbishment and replacement of the public sector assets which creates a standalone business. The private sector will create the asset and deliver a service to the public sector client. In return, the private sector will receive payment commensurate with the levels, quality and timelessness of the service provision throughout the concession period' (Ninth Malaysia Plan, 2006)

The beginning of PPP in Malaysia is marked when the government introduced the Malaysia Incorporated concept in 1981 (Khairuddin, 2014) and followed by the Privatization Policy 1983, Guidelines on Privatization 1985 and Privatization Master Plan 1991. These strategies of economic liberalization are announced to increase the participation of the private sector (Suhiza & Ajija, 2011). The Malaysian government's objectives in the implementation of PPP include (Khairuddin, 2014):

- Improve productivity and efficiency,
- Reduce their financial and administrative loads,
- Cut down the magnitude and involvement of the public sector in the economic,
- Enable economic growth
- Assist to encounter the targets of countrywide economic policy.

Thus, the objectives of the above will give the benefits and enhance the projects values if the objectives are achieved.

For additional information of PPP in Malaysia it review in Tenth Malaysia Plan. It indicates the government plan budgeted RM20 billion to facilitate fund in effort into attracting the private sectors involve into delivering public services. Moreover, the objectives of this fund assist bridge the financial viability gap for private investment which expected worth at least RM200 billion in areas given priority by the government such as tourism, infrastructure, and education projects. At current, the government identified and undertaken fifty two PPP projects with high-impacts worth RM 63 billion, which includes seven highway projects, two coal electricity generation plants, five public universities, privatization of the seaport, redevelopment of media city, and one development land project (Tenth Malaysia Plan, 2010).

As the implementation of PPP in Malaysia are growing extremely, the Malaysian government constantly reviewed and revised the PPP arrangements and effectiveness to enhance the existing practice of PPP implementation to make sure the accomplishment of its critical objective.

2.6 RISK IN THE CONTEXT OF PUBLIC PRIVATE PARTNERSHIP (PPP)

The existing risks will affect the success of PPP projects, but the private sector still actively to take over the traditional role of the public sector in financing, procuring and managing such assets (Ng and Loosemore, 2007). Thus, the risk in PPP projects must be managed properly. It is known that risk transfer is a vital element of PPP, and it's always been debated that it also brings additional benefits for the public sector, including improved project delivery and maintenance of public infrastructure, elimination of over-specification and better delivery of public services (Dixon et al., 2005). Therefore, risk management is a critical element of PPP.

The intention of the public sector is to transfer the risk to the private sector, but in practice some risks cannot be transferred and some risks must be shared (Demirag et al., 2010). Thus, an agreement must work together between both public and private sectors